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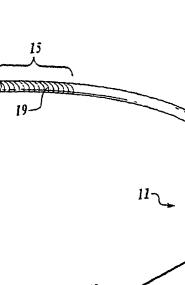
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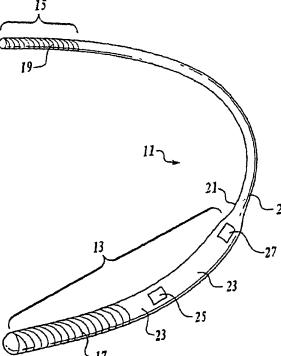
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(54) Title: UNITARY SUBCUTANEOUS ONLY IMPLANTABLE CARDIOVERTER-DEBRIBILLATOR AND OPTIONAL PACER



(57) Abstract: A unitary subcutaneous implantable cardioverter-defibrillator disclosed which has a long thin housing in the shape of a patient's rib. The housing contains a source of electrical energy, a capacitor, and operational circuitry that senses the presence of potentially fatal heart rhythms. Provided on the housing are cardioversion/defibrillation electrodes located to deliver electrical cardioversion-defibrillation energy when the operational circuitry senses a potentially fatal heart rhythm. The unitary subcutaneous implantable cardioverter-defibrillator does not have a transvenous, intracardiac, epicardial, or subcutaneous electrode.

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patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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| Electronic d | lata base consulted during the international search (name of data base | and, where practical, search te | rms used) | |
| EPO-In | ternal | | | |
| C. DOCUM | ENTS CONSIDERED TO BE RELEVANT | | | |
| Calegory * | Citation of document, with indication, where appropriate, of the relevant | rant passages | Relevant to daim No. | |
| A | US 5 385 574 A (HAUSER ROBERT G 8 31 January 1995 (1995-01-31) | ET AL) | 1,35,69, 85,96, 102,103, 105-108 | |
| | the whole document | | | |
| A | US 4 157 720 A (GREATBATCH WILSON 12 June 1979 (1979-06-12) |) | 1,35,69, 85,96, 102,103, 105-108 | |
| | the whole document | | | |
| A | EP 0 627 237 A (TRABUCCO HECTOR OF ;GAVRIELIDES JORDAN (DE)) 7 December 1994 (1994-12-07) | SVALDO | 1,35,69, 85,96, 102,103, 105-108 | |
| | the whole document | / | | |
| | | | | |
| X Fur | orther documents are listed in the continuation of box C. | X Patent family members | are listed in annex. | |
| *A' docum cons *E' earlier filing *L' docum which citati *O' docum other | ment defining the general state of the art which is not sidered to be of particular relevance or document but published on or after the international date nent which may throw doubts on priority claim(s) or | cited to understand the printinvention X* document of particular relevation cannot be considered novel involve an inventive step wth the document of particular relevations of the considered to invidocument is combined with | onflict with the application but ciple or theory underlying the transcribed invention or cannot be considered to the document is taken alone | |
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IN RNATIONAL SEARCH REPORT

Inter. .ional Application No PCT/US 01/29106

| | | PC1/U3 01/29100 | | |
|-------------|---|---|--|--|
| C.(Continua | ation) DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | | |
| A | US 5 331 966 A (BENNETT TOM D ET AL) 26 July 1994 (1994-07-26) | 1,35,69, 85,96, 102,103, 105-108 | | |
| | the whole document | | | |
| Y | WO 99 53991 A (ALZA CORP) 28 October 1999 (1999-10-28) the whole document | 113 | | |
| Y | US 6 093 173 A (BALCETA JOBERT P ET AL) 25 July 2000 (2000-07-25) the whole document | 113 | | |
| A | WO 97 29802 A (LOEB GERALD E ;RICHMOND FRANCES J R (CA); ADVANCED BIONICS CORP (U) 21 August 1997 (1997-08-21) the whole document | 113 | | |
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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-31,35-108

unitary subcutaneous implantable cardioverter-defibrillator

2. Claim : 113

apparatus for implanting an implantable cardioverter-defibrillator

IN IRNATIONAL SEARCH REPORT

Information on patent family members

Inte. .ional Application No PCT/US 01/29106

| Patent document ted in search report | | Publication date | | Patent family member(s) | Publication date |
|---|-----|------------------|------|-------------------------|------------------|
| JS 5385574 | Α | 31-01-1995 | US | 5133353 A | 28-07-1992 |
| ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | ^ | 31 01 1333 | AT | 168024 T | 15-07-1998 |
| | | | AU | 641224 B2 | 16-09-1993 |
| | | | AU | 7354591 A | 07-11-1991 |
| | | | CA | 2040800 A1 | 26-10-1991 |
| | | | | | 13-08-1998 |
| | | | DE | 69129716 D1 | 24-12-1998 |
| | | | DE | 69129716 T2 | |
| | | | DK | 453761 T3 | 19-04-1999 |
| | | | EP | 0453761 A1 | 30-10-1991 |
| | | | ES | 2120411 T3 | 01-11-1998 |
| | | | JP | 5064666 A | 19-03-1993 |
| | | | US | 6157860 A | 05-12-2000 |
| | | | US | 5713926 A | 03-02-1998 |
| | | | US | 6280462 B1 | 28-08-2001 |
| | | | US | 5916238 A | 29-06-1999 |
| us 4157720 | Α | 12-06-1979 | AU | 521296 B2 | 25-03-1982 |
| | | | AU | 3986278 A | 20-03-1980 |
| | | | CA | 1120548 A1 | 23-03-1982 |
| | | | DE | 2840307 A1 | 29-03-1979 |
| | | | FR | 2403075 A1 | 13-04-1979 |
| | | | GB | 2004188 A ,B | 28-03-1979 |
| | | | ΙL | 55526 A | 31-03-1981 |
| | | | ĴΡ | 54060791 A | 16-05-1979 |
| | | | ΜX | 146747 A | 05-08-1982 |
| | | | NL | 7809422 A | 20-03-1979 |
| | | | SE | 7809645 A | 17-03-1979 |
| EP 0627237 | | 07-12-1994 | US | 5243977 A | 14-09-1993 |
| | | | EP | 0627237 A1 | 07-12-1994 |
| US 5331966 | Α | 26-07-1994 | AU | 654552 B2 | 10-11-1994 |
| | | | ΑU | 1750692 A | 02-11-1992 |
| | | | CA | 2106378 A1 | 06-10-1992 |
| | | | DE | 69210395 D1 | 05-06-1996 |
| | | | DE | 69210395 T2 | 09-01-1997 |
| | | | EP | 0578748 A1 | 19-01-1994 |
| | | | JP | 2655204 B2 | 17-09-1997 |
| | • | | JΡ | 6505662 T | 30-06-1994 |
| | | | WO | 9217240 A1 | 15-10-1992 |
| WO 9953991 | Α | 28-10-1999 | AU | 3748899 A | 08-11-1999 |
| | • • | | TW | 442273 B | 23-06-2001 |
| | | | WO | 9953991 A1 | 28-10-1999 |
| US 6093173 | Α | 25-07-2000 | NONE | | |
| WO 9729802 | A | 21-08-1997 | WO | 9729802 A2 | 21-08-199 |
| | | | US | 6185455 B1 | 06-02-200 |
| | | | ÜS | 6214032 B1 | 10-04-200 |
| | | | US | 6051017 A | 18-04-2000 |